



21ST CENTURY MAKERS

The influencers and design philosophy of earthworld architects and interiors (2000–2018).

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At a recent Designer, Architect and Specifier (DAS) mini-conference in Pretoria one of earthworld's founding members, André Eksteen, presented an overview of their architectural practice and its philosophies. One image from the presentation that outlined architectural influences, King's College Cathedral, stood out in stark contrast to other more contemporary examples. Although Eksteen commented on the relationship between form and material, the architecture also, perhaps subconsciously, represents other aspects of earthworld's practice philosophy such as a structurally rationalist and phenomenological attitude to the making of architecture, the architect as master maker and an alignment with craftsmanship.

Following on from articles on the architecture of Thomashoff+Partners and Marguerite Pienaar in the 2015 and 2016 July/August issues of *Architecture South Africa* respectively, this article will also sketch the biographical influences and design philosophy of earthworld architects and interiors to not only increase the limited record of the practice of South African architects, but also to elucidate design approaches.

MAKERS IN THE MAKING

Braam de Villiers (1968—) and André Eksteen (1971—) both graduated from the Department of Architecture at the University of Pretoria (UP) in 1995. In March of that year, De Villiers became the second UP student to win the Corobrik National Architectural Student of the Year Award with his dissertation project “A city market for Bosman Street Station”¹. Both De Villiers' and Eksteen's dissertations set normative position for future endeavours, most recently realised in the Future Africa Innovation Campus at UP. De Villiers' dissertation focused on African space making and an architecture of tectonic contrasts while Eksteen's project explored the possibilities of prefabrication.

The roots of the practice philosophy were, however, grounded long before the partners began their architectural education and association. Eksteen recalls that growing up in a seriously DIY family, he always had little projects to do. “Whether it be a new trailer or a fence or kitchen cupboards, I always had something going in terms of making things. It was not a surprise that my voyage of discovery led me to a fascination for materials.” (De Villiers and Eksteen, 2018). This is clearly evident in his many visits² to the famous Pretoria-based architect Peter Hattingh's House Jordaan in Lynnwood, which is a tour de force of material inventiveness and phenomenological exuberance. While still at secondary school, Eksteen worked for an architectural practice that provided a solid grounding for his entry into architecture school. De Villiers' upbringing was seemingly more academic as his father's career began in the natural sciences culminating with an MBA and PhD in Economic and Management Sciences and a professorship at UP. De Villiers' childhood was culturally inclined as he

took on the musical inclinations of many of the family members by playing the violin.

Both partners cite their educational influences as being iconic Modern Movement architects, lecturers and fellow students. De Villiers notes (De Villiers and Eksteen, 2018) that his partner is influenced by Louis Kahn³ (1901—1974), Frank Lloyd Wright (1867—1959) and Mies van der Rohe (1886—1969), while he is a Le Corbusier (1887—1965) disciple, no doubt spurred on by the local canonic formal influences of ‘Ora Joubert⁴ (1959—). De Villiers is also inspired by another set of local canonic buildings, those by Roelof Uytenbogaardt⁵ (1933—1998). Steinkopf Community Centre, in the Northern Cape, particularly inspired De Villiers as a student. The partners highlight that they were fortunate to be educated by the tail end of the real modernists at UP such as Jo Kemp⁶ (1941—) and Dieter Holm⁷ (1936—) who provided them with future thinking skills (such as energy and sustainability) and Hans Wegelin⁸ (1940—) who inculcated a strong technical education. The partners also recognise the input of Emeritus Professor Roger Fisher⁹ (1951—) and his introduction of ecosystemic thinking¹⁰ as well as the studio teachings of Anton du Toit¹¹ (1934—), whose buildings were technologically innovative. Critical design thinking skills, inculcated by Emeritus Professor Schalk le Roux¹² (1945—), supported a solid theoretical grounding by lecturers Piet de Beer¹³ (1957—) and Eloise Laubscher¹⁴ (1965—). Through De Beer, they were introduced to the theories of Norberg Schulz (1926—2000) (and its antecedents in Heidegger's writings) and these approaches have consistently shaped De Villiers' and Eksteen's thinking about architecture's relationship to place. Classmates who the future partners formed a close association with included Amanda Breytenbach¹⁵, Marianne de Klerk¹⁶, Heinrich Wolf¹⁷ and Marcus Smit¹⁸, all of whom were strong designers with a dedicated studio work ethic.

Directly after completing their studies, both future partners worked for Joubert, Kammeyer¹⁹ and De Villiers²⁰ architects. As Heinrich Kammeyer was teaching at Wits and André De Villiers at UP, De Villiers and Eksteen had an unconventional practice training as they had to find their own way of working without constant guidance. At the time, they were tasked with the design and construction of 12 schools. Steel-framed technology was relatively new for the time, as was skills transfer with emerging builders, so the new graduates had to quickly learn how to engage directly with subcontractors. As the practice was based in Kammeyer's house (which he himself built), the future partners were surrounded by a haptic architecture of Semperian-like²¹ “floating” roof and “grounded walls”; and it was the discussion of the nature of architectural elements with Kammeyer that still serves as inspiration. >

1 Future Africa Innovation campus — dining hall interior.

Earthworld's House Mouton (2014), in the Roodeplaat Dam catchment area, epitomises the early “Semperian” practice influences, while echoing the late Modern Movement organic interpretations²² of Pretoria-based architect Karl Jooste (1925—1971). House Mouton is grounded in place through its pavilion organisation, roofs that mimic the surrounding acacia thorn trees, stone walls that emulate the surrounding hills and “anthill-like” fireplaces (<https://www.ewarch.co.za/about/>).

EARTHWORLD IS BIRTHED

The dire financial crisis of 1997 resulted in both future partners being retrenched and going their separate ways. De Villiers obtained a Fulbright scholarship and, in 1998, completed a master's degree in bio-climatic design at the University of Arizona in the United States of America. Eksteen worked from his parents' garage on jobs for family (including his sister's house), while de Villiers, on his return to Pretoria, worked on small alterations and additions projects from 'Ora Joubert's house in Clydesdale. Later, De Villiers moved to a John (Johannes) van de Werke (1913—1980)²³ house in Waterkloof, Pretoria, and Eksteen soon followed. They were joined by a range of creatives including architects Gerrit Wassenaar²⁴ and Faan Nel²⁵. In 2000, they

formed a joint practice, André Eksteen and Braam de Villiers Architects. A series of sketchbook titles such as *sky world* and *earthworld* were the incidental inspiration for the eventual practice name. This marked the start of a prolific and highly-awarded²⁶ architectural practice.

One of Eksteen's first important architectural forays was a house on Betty Street, Pretoria, “situated at the foot of the northern hang of Meintjies Kop, a ‘kopje’ gaining prominence due to its southern hang providing the backdrop of the Union Buildings”. (<https://www.ewarch.co.za/post/2324/house-visser/>). The use of a brick barrel

vault and contrasting light steel window frame signifies the beginning of the practice's unconventional tectonic experimentation with materials and structure.

PRACTICE PHILOSOPHY

“In the *making* of meaningful things” (<https://www.ewarch.co.za/about/>) earthworld's practice philosophy — founded in creative and supportive upbringings, an ecosystemic tertiary education and unconventional practice experience — has resulted in a manifesto founded, mainly, on phenomenological and tectonic principles. It argues, in a critical Post-Modern sense for a return to an architecture of the senses, that is grounded in place and which fosters relationships between user and their direct and broader environments.

**BOTH PARTNERS
CITE THEIR
EDUCATIONAL
INFLUENCES AS
BEING ICONIC
MODERN MOVEMENT
ARCHITECTS,
LECTURERS AND
FELLOW STUDENTS**



*“In pursuit of beauty ... a single brush stroke should suffice.
A building should be simple; yet provocative and dynamic.
... a building should be an emotional experience
... move you
... technology and programme guide the process
... a building defines the inhabitant’s relationship to the world itself ...
the way it’s entered ...
an existential reference ...
space should embrace technology, culture, style, nature and context space should ...
... pay homage to the site
... have respect for function
... embrace the natural and man-made order
... be harmonious with nature and climate
... pay service to aesthetic values ...
Proportion, Light, Shade, Mood, Texture, Atmosphere”
(<https://www.ewarch.co.za/team/>)*

But, the practice philosophy is also deeply engaged with the creation of meaning, not only for the designer and user, but the maker too. “With our world becoming more and more global — virtual and less defined — the need for defining the *Heimat*²⁷ has become greater than ever.” Meaning has become more important than ever. Falling Waters by Frank Lloyd Wright, built for the Kauffmann family in the 1920s, transcends the physical to become an icon; to become a “Meaningful Thing”. It epitomised progress without being industrial ... by becoming a symbol of innovation whilst acknowledging the context without trying to imitate or assimilate” (<https://www.ewarch.co.za/about/>).

De Villiers and Eksteen regard themselves as “obsessive-compulsive” designers who enjoy every part of the design process. They believe that all aspects of a building should be designed while a coherent conceptual framework for design is also crucial. They lament that many architects tend to focus on achieving the “big idea”, as opposed to understanding that design is part of a larger discipline of critical thinking and iteration. “As designers, we tend to lose perspective, forgetting the bigger picture, and focusing on either function or budget or the clients’ preferences that they bring to our offices to show us how much they’ve done their homework. Function can be an informant but it is not a concept.”

For earthworld, conceptual thinking is a multi-faceted exercise that should avoid a singularity of approach. It can be argued that their design process is organic, which allows for a multiplicity of inputs, not only from the client, but also from those making the buildings. The partners indicate that they have developed an intuitive way of designing over the years, but it can be argued that, in their case, the intuitive is guided by the rational as they believe that, among other influences, the building is primarily a tool for place making. It is these contextual influences, which vary from the natural to the social (or

DE VILLIERS AND EKSTEEN HAD AN UNCONVENTIONAL PRACTICE TRAINING AS THEY HAD TO FIND THEIR OWN WAY OF WORKING WITHOUT CONSTANT GUIDANCE

even economic), that provide inspiration and guidance for design, while rationality is used to assess the “product” against its intended “purpose”.

PLACE MAKING

De Villiers and Eksteen argue for an architecture of meaning in place as “physical contexts ranging from global to regional, national, urban and neighbourhood have caused changes to associations rather than locations”. They also argue for architecture that is both catalytic and multi-faceted, “especially in a country with real problems ... buildings can play a much greater role than merely fulfilling a critical function. Every intervention must have maximum benefit on an industrial, social, economic and, most importantly, phenomenological level. Every opportunity to build must be used as a catalyst for change and upliftment”.

Earthworld’s belief in the importance of place, *genius loci* and associated meaning has created a standpoint that is partially critically regionalist through its critique of the “glocal”. Earthworld believes that “the complex contextual matrix of fitting into the global as well as the neighbourhood has brought architecture to a crossroads. With cities and communities becoming virtual, the role of the architect as ‘place maker’ is changing. Identifying with a certain culture, without actually or physically being at a certain location, has become the norm. Gathering meaning in things is becoming increasingly arbitrary” (<https://www.ewarch.co.za/about/>).

The I-CAT Offices and Warehouse (2015), which received a Pretoria Institute for Architects’ (PIA) award for commercial/brand-related architecture in 2017 as well as a SAIA Award of Merit in 2018, epitomises the practice’s place making philosophy. I-CAT is a “production oasis in the monotony of a Pretoria East industrial enclave ... the main [north-facing] courtyard, with a two-storey high steel and timber pergola, creates a welcoming entrance while providing south light to, and views from, all of the glazed administrative areas” (Barker, 2017). The project is also place bound through the application of three principles of sustainability, namely ecological, social and economical, that showcase the client’s philosophy toward the natural environment through passive systems such as orientation, shading, natural ventilation and lighting (<https://www.ewarch.co.za/post/2337/cat-eco-factory/>). >

283 Schools that De Villiers and Eksteen worked on in their formative years with Joubert, Kammeyer and De Villiers architects. 4 House Mouton. 5 House on Betty Street.

In House Van Dyk, which won a PIA Regional Award for Residential Architecture in 2017 and a SAIA Award of Merit in 2018, the simple conceptual idea of an architectural promenade and central entrance courtyard mitigates against the blight of estate living. There is a clear tectonic distinction between the warm plywood interiors and external articulation through steel and timber *brise-soleils* while the formal geometries bear a close allegiance with site form, both in plan and section.

House Coertse (2017) at Waterfall Country Living Estate in Midrand, Gauteng, is a north-facing home ordered on two levels with a perforated folding screen at the upper level to provide privacy for the bedrooms and a contrasting glazed living area below, reminiscent of Pierre von Meiss' theories of gravity in architecture²⁸. This formal opposition grounds the building to its site through a range of introverted and extroverted spaces.

Likewise, the Centenary Building (2010) at the University of Pretoria's Hatfield campus, which won PIA and SAIA awards, is informed by, and, generates place. The organisation of the six 300-seat auditoria roots the building in place while an architectural promenade is used to connect to the surrounding movement routes. The building is also rooted in place through its "micro regionalism" (<http://www.worldarchitecturenews.com/project/2010/13427/earthworld-architects/centenary-building-in-pretoria.html>) as it responds, formally, to other late Modern Movement inspired buildings such as Brian Sandrock's²⁹ (1925—1990) Administration building (1963—1968) and the adjoining Law Faculty (2004) by Martin Kruger³⁰ (1957—).

MASTER MAKERS

De Villiers and Eksteen lament the ever-increasing limitations placed on architects, as well as their dwindling impact and argue for a reconsideration of the role that modern day technology can play in

redefining the task of the architect. "Have we become designers of systems, applying technology, rather than creating modern-day cathedrals — structures that transcend reality, buildings that become icons, gathering meaning rather than being machines ... buildings that become central figures in the drama of everyday life. In our practice, we explore the role of architecture and technology (not industry) to bridge the gap between the system (non-tangible, abstract) and the physical (materiality, form, texture). We explore the notion that architecture can be de-materialised by mastering the tectonic and, in so doing, to change

A SERIES OF SKETCHBOOK TITLES SUCH AS SKY WORLD AND EARTH WORLD WERE THE INCIDENTAL INSPIRATION FOR THE EVENTUAL PRACTICE NAME. THIS MARKED THE START OF A PROLIFIC AND HIGHLY-AWARDED ARCHITECTURAL PRACTICE



the way people interact with architecture to elicit its deeper meaning and associations" <https://www.ewarch.co.za/about/>

Equally important for the practice, is honesty and expression of structure reinforced by Eksteen's assertion (De Villiers and Eksteen, 2018) that the structure and technology used in a Gothic cathedral is logical, visible and legible. This reaffirms Frampton's restatement of the principles of Structural Rationalism as originally espoused by Viollet-le-Duc³¹ who argued that "in architecture, there are two necessary ways of being true. It must be true according to the programme and true according to the methods of construction. To be true according to the programme is to fulfil exactly and simply the conditions imposed by need; to be true according to methods of construction is to employ the materials according to their qualities and properties" (1992:64).

These principles are exemplified in almost all of the practice's buildings. In the HEFF *Quipaco* hunting lodge (2010) in Mozambique, the practice began experimenting with prefabricated timber construction in a factory setting with transport to, and installation on, site. House Alto (2013) in the Cape is an extension of these ideas using a combination of steel and timber frames made off-site and erected in situ. *Stortemelk* Hydroelectric Plant (2016), which received a 2017 Award for Architecture from the Free State Region of South African Institute of Architects (FSAIA) and a 2018 SAIA commendation, overtly explores the possibilities of the contrast between a stereotomic concrete base and tectonic steel frame, clad with corten steel and polycarbonate sheeting.

MATERIALS AND MAKING

Eksteen emphasises that for him, 90 per cent of all design inspiration comes from the material, once an overall concept (defined by place and programme) has been formed. De Villiers laments that architects have lost the ability to choose materials according to their inherent nature as the ubiquitous product catalogue has dumbed down architectural decision-making. He asks, like Kahn, "what does the building (material) want to

6 I-CAT factory. 7 House Coertse.

be? The more we master technology, the more we close the gap between the natural and man-made world, and between art and architecture. We realise, however, that technology is not the generator but merely the medium” (<https://www.ewarch.co.za/about/>).

The practice has, over the years, experimented with a number of materials, initially brick, later concrete, then steel and more lately timber, but it is the honesty of use, expression and innovation that sets the practice’s work apart from much of the local conventional architecture of today. Their approach to technology echoes that of Gawie Fagan (1925—) whom the partners look up to. Fagan’s choice of appropriate materials mediates practical and aesthetic requirements and echoes the sentiments of Gottfried Semper (1989:102), who argued that “... if the most suitable material is selected for their embodiment, the ideal expression of a building will of course gain in beauty and meaning by the material’s appearance as a natural symbol”. De Villiers (De Villiers and Eksteen, 2018) also cites Norman Eaton (1905—1966)³² as a major local architectural influence in this regard. Regionalist architects like Eaton reconciled industry and art through the inventive use of elements such as brick and tile. Eaton’s woven walls and patterned woodblock floors are demonstrative of a craftsman using standardised materials at hand to create a regionally rooted idiom. Eaton saw this approach as a way out of the “inconsistency, incoherence, disharmony, and general chaotic ugliness of architecture” at the time (Harrop-Allin, 1975:26).

The Tribeca central (2016) and I-CAT factories (2015) are both bold experiments with the honest use of clay brick, the tone being set by House Coetzer in 2000. The stereotometry is, in both cases, countered not only by tectonic additions, but also by curved corners and patterned facades, not unlike Eaton’s. But the development of these design approaches, through the use of brick, are clearly visible in the partner’s first investigations, in the school projects, undertaken in their formative practice years.

Houses Gauche (2010) and Nieuwenhuys³³ (2016) are bold, but contrasting, experiments in the use of concrete. Gauche’s horizontal expression is structurally determined as the house is suspended between two rocky outcrops to minimise site intervention. House Nieuwenhuys is composed of a series of deep concrete frames (on steel portals at times) that capture and release space to achieve privacy, focused views and external connections in a tight, and mundane, suburban setting. The heaviness of concrete frames a lightness and interconnectedness of Adolf Loos³⁴ like space.

House Van der Westhuizen (2016) follows a line of investigations into prefabricated steel construction prompted by Awazi Petroleum (2009)³⁵ in Menlo Park, Pretoria, Foghound Interactive Coffee Company³⁶ in Midrand (2012), Phakalane (2013) in Botswana, and Houses Alto (2013) and Izeboud (2013). All of these examples are based on a repetitive steel portal frame with glass or timber infill panels. The aesthetic of many of >



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8 House Alto. 9 Stortemelk Hydroelectric Plant. 10 Tribeca Central.

these buildings, in particular, House Alto is generated by standard lengths of steel that minimise wastage.

HEFF *Quipaco* hunting lodge (2010) was also the start of long-term investigation into the possibilities of timber construction, spurred on by the experiences of Eksteen growing up in a house of timber poles with steel-framed glazed windows and doors, constructed by his father. In 2009, House Zeeman, an early 20th century Herbert Baker³⁷ School Residence in Pretoria, was altered through the addition of a number of elements including the honest use of natural materials in “a timber veranda, which was bolted to the existing building. It projects into the garden, drawing in the natural landscape. Standard lengths of laminated saligna, bolted together, minimised waste and improved recyclability” (<https://www.ewarch.co.za/post/2329/house-zeeman/>). House Van der Merwe (2014) in Stellenbosch was an experiment with a double pitch portal frame, the idea of which has been innovatively extended in the Future Africa Innovation Campus. In House Dreyer (2017) “a timber portal frame prefabricated in a workshop and assembled on site is used for the first floor to reduce time on site and challenge the norms of materiality. The finishes of both the interior and exterior of the timber structure reflect the structural materiality, clad with thermo-treated poplar on the exterior, birch plywood between the portal frames on the interior ... the design stands as an example of how traditional construction techniques and material choices can be challenged” (<https://www.ewarch.co.za/post/2915/dreyer/>).

THE PROCESS OF MAKING

One could argue that the antithesis of industrialisation is art and that craft is a mediative condition. The consequences of the Industrial Revolution were bemoaned by many architects and historians, including John Ruskin (1819—1900), who remarked that “the last form of fallacy which it will be remembered we had to deprecate, was the substitution of cast or machine work for that of the hand, generally expressible as ‘operative deceit’. There are two reasons, both weighty, against this practice; one, that all cast and machine work is bad, as work; the other, that it is dishonest” (Ruskin, 1849:34). During this time, “charts replaced apprenticeship” (Mitcham, 2005:37) while “arguably, the evidence of the hand in preindustrial architecture [that] conveyed a sense of value, commitment, and importance in each detail of an architectural work” (Carlson-Reddig, 1997:99 began to be lost.

Although Earthworld believes in the honest expression of materials, does not negate the machine, but rather, in a critically regionalist way, argues for the reinvention of the craftsman, using new technologies, as a counter to modern-day standardisation. Earthworld’s vision is to use technologies such as digital manufacturing processes to assemble buildings. It is an argument for the “systemisation of technology ... as today architecture



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11 *House Gauche*. 12 & 13 *House Niewenhuys*.



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is moving more and more towards the system, or is forming a critical relationship to the system within which it functions” (<https://www.ewarch.co.za/about/>). This approach extends the thinking of the hi-tech architects such as Renzo Piano (1937—), whom the practice partners also admire.

The construction and infill of the incomplete House Fitzgerald (2010) is a middle ground approach towards the reinvention of the craftsperson. Overtly crafted sheer concrete walls provide privacy for the various rooms while prefabricated inclined steel frames, made by a specialist subcontractor, provide the first layer of enclosure. It is in the second layer of enclosure where machine technologies are merged with handcrafted items such as the brass fittings that facilitate glazing fixings and openings.

One of earthworld’s most important contributions to architectural design has been the rethinking of the construction process to limit time and wastage, to reduce costs and add value to those making the buildings. “In our early careers we built most of the buildings ourselves, so you had to design in such a way to construct the building, not as it traditionally happens in series but, rather in parallel. Then issues like prefabrication and tolerances become important” (De Villiers and Eksteen, 2018). The partners argue that architects must design the entire system, from economics to labour to create a demand for new skills. Materials can still be imported, where cost-effective, but they should be processed locally to mobilise a series of possible economies. “Traditionally, a construction process changes many hands, going from sourcing to manufacturing, to retail, eventually reaching the site through contractors. Shortening this value chain

would drastically reduce cost and time; dealing directly with manufacturers also allows for greater understanding of construction materials and improves quality control” (<https://www.ewarch.co.za/post/3096/futureafrica/>). This socialist viewpoint echoes the critical Post-Modern and humanist thinking of Kenneth Frampton in his writings titled *Labour, Work and Architecture*. Frampton (Jaskot, 2004:125) defines labour as “essentially natural and related to biological processes, and work as fundamentally artificial in that it produces the world of things and the borders in which individual life occurs. In the modern world of consumption and faith in technology, the sphere of objects dominates to the point that individuals are subject to the ever-changing and impermanent world of the commodity, architectural and otherwise. Such a social condition replaces ... culture with the production of kitsch or the celebration of technology for its own sake”. It is the latter tendency, in particular, that earthworld is at pains to avoid. Consequently, it tries to limit middlemen in the construction process, by directly linking suppliers with manufacturers thus reducing costs and giving meaning, and value to labour. This limits the currently perceived disconnect between form and meaning and engenders a more positive relationship between designer, craftsman and user. This approach is also akin to the medieval master builders where the precise sizes and details of the Gothic building were not finalised, but left to those individuals who happened to be on site, representing an ever-changing dynamic design and construction process.

These approaches have all been realised in the practice’s latest, and largest, project to date, the new Future Africa Innovation³⁸ at UP. “The brief required a number of programmes to be accommodated on the campus, including a dining hall, conference centre, research commons, and 300 living units, with varying scales, ranging from single bedrooms to family units” (<https://www.ewarch.co.za/post/3096/futureafrica/>).

“The intention was to challenge existing design and construction processes by combining high-level design processes with local resources and skills. Each programme has been addressed through a specific solution to minimise time on site, as well as rethinking how traditional materials are employed. The housing units are prefabricated from precast concrete and assembled on-site, with services and fittings already having been installed. In the dining hall, through inter-disciplinary partnerships with designers and manufacturers, flat-pack, 90mm thick bolted birch plywood portal frames were developed to carry the envelope. Designed in segments, the portals were transported to the site and assembled in a matter of hours, reducing the need for water, shuttering, heavy machinery” (<https://www.ewarch.co.za/post/3096/futureafrica/>). The relationship between structure and enclosure is heightened by a separate larch window sub-frame system that facilitates a connection to the outside world, controlled >

14 House Van der Westhuizen. 15 House Izeboud.

light and sun while creating a unique phenomenological experience. The contrasting stereotomic housing units are prefabricated concrete shells, organically but structurally organised to create a semi-urban experience on the “rural” campus. It is here that the integration of structure and services is innovatively expressed, but, more so, pragmatically organised to ease construction and maintenance over time.

CONCLUSION

The tectonic resolution of Future Africa Innovation Campus represents a culmination of more than 20 years of practice experience that has cemented the architectural maturity of earthworld architects and interiors. The campus buildings exemplify earthworld’s practice philosophies that were founded in creative and supportive upbringings, an ecosystemic education and unconventional practice experience. They also demonstrate the principles of structural rationalism, the role of modern-day technology and craftsmanship and a healthy dose of phenomenology, which, together, have created a unique set of spaces embodied with meaning for designers, makers and users. Subconsciously, the underlying architectural and tectonic principles of Gothic architecture have been extended through modern-day technologies. Earthworld’s conscious approach to architectural design and construction has certainly set a benchmark for cerebral practice in the 21st century and demonstrates that the makers have certainly been “made”.

REFERENCES

- Barker, A. 2017. *Pretoria Institute of Architect’s Awards Citations 2017*. Pretoria Institute of Architects.
- Carlson-Reddig, K. 1997. Students Consider Architecture’s Materiality. *Journal of Architectural Education*. Vol. 51, No. 2. Nov. pp96—104. Wiley on behalf of the Association of Collegiate Schools of Architecture. Accessed on 13 June 2013 from <http://www.jstor.org/stable/1425449>.
- De Villers, B and Eksteen, A. 2018. Interview with the author on 24 July 2018. 177 Umkomaas Rd, Ashlea Gardens, Pretoria.
- Forder, C. 2018. Third-year architecture student at the University of Pretoria.
- Frampton, K. 1992. *Modern Architecture, A Critical History*. Thames and Hudson.
- Frampton, K. 2001. *Studies in Tectonic Culture. The Poetics of Construction in Nineteenth and Twentieth Century Architecture*. The MIT Press. Cambridge. Massachusetts. London, England.
- Harrop-Allin, C. 1975. *Norman Eaton: Architect. A study of the work of the South African architect Norman Eaton 1902—1966* Cape Town and Johannesburg. C. Struik.
- <http://www.worldarchitecturenews.com/project/2010/13427/earthworld-architects/centenary-building-in-pretoria.html> [accessed 30 September 2018].

- <https://www.artefacts.co.za/main/Buildings/archframes.php?archid=4432> [accessed 2 October 2018]
- <https://www.britainexpress.com/counties/cambridgeshire/az/cambridge/kings-college-chapel.htm> [accessed 1 October 2018]
- <https://www.ewarch.co.za/about/> [accessed July 2018].
- <https://www.ewarch.co.za/architecture/> [accessed 30 July 2018].
- <https://www.up.ac.za/future-africa> [accessed 30 July 2018].
- Jaskot, P. 2004. Reviewed Work(s): Labour, Work and Architecture: Collected Essays on Architecture and Design by Kenneth Frampton, *Journal of the Society of Architectural Historians*, Vol. 63, No. 1 (Mar, 2004), pp125—126. University of California Press.
- Mitcham, C. 2005. Thinking Re-Vernacular Building. *Design Issues 21* (1, Winter), pp32—40. The MIT Press Stable. Retrieved on 15 June 2013 from <http://www.jstor.org/stable/25223978>.
- Ruskin, J. 1849. *The Seven Lamps of Architecture*. John Wiley, New York.
- Semper, G. 1989. *The Four Elements of Architecture and other writings*. Cambridge [England]. New York.
- Von Meiss, P. (2000). “The aesthetics of gravity”, in *Architectural Research Quarterly*, 4, pp 237—246.

AWARDS:

- 2018: SAIA — Award of Merit for I-CAT Offices and Warehouse
- 2018: SAIA — Award of Merit for House Nieuwenhuys
- 2018: SAIA — Award of Merit for House Van Dyk
- 2018: SAIA — Commendation for Stortemelk Hydropower Project
- 2017: FSAIA — Award for Architecture: Stortemelk Hydropower Project
- 2017: PIA — Regional Award for Commercial/Brand-related Architecture: I-Cat Environmental Solutions
- 2017: PIA — Regional Award for Residential Architecture, New: House Van Dyk
- 2017: PIA — Award for Architecture: House Nieuwenhuys
- 2016: SAIA — Commendation: New Coffeeshop and Showroom for Foghound Interactive Coffee
- 2016: SAIA — Commendation: House du Plessis
- 2016: Retail Design Awards — Commendation: Lucky Bread Company, Mall of Africa
- 2015/16: AfriSam-SAIA Award for Sustainable Architecture & Innovation: I-Cat Eco Factory
- 2015: PIA Award Commendation: Tribeca Original
- 2015: PIA Award for Architecture: New Coffeeshop and Showroom for Foghound Interactive Coffee
- 2015: PIA Category Winner — Commercial or Brand-Related Architecture: New Coffeeshop and Showroom for Foghound Interactive Coffee
- 2015: PIA Award of Excellence: House Mouton
- 2015: PIA Award for Architecture: House du Plessis
- 2014: Retail Design Awards: Best Restaurant Design 2014
- 2014: PIA Award — Commendation: House Gauche
- 2013/14: PIA Award — Architecture of Merit: House Gauche
- 2012: Retail Design Awards — Best Retail Restaurant in South Africa
- 2009: SAIA Award of Merit Award in Architecture: Centenary Building
- 2009: PIA Award for Architecture: Centenary Building
- 2009: PIA Award of Merit for Architecture: Centenary Building
- 2009: PIA Peer Awards: Centenary Building

FOOTNOTES

¹ S.n. 1995. Corobrik Architectural Student of the Year. Architect & Builder, March: 25.

² Eksteen lived only a few doors down.

³ Eksteen also worked for a Pretoria-based architect, Louis Cloete, who studied under Kahn (De Villiers, B. and Eksteen, A. 2018)

⁴ "Ora Joubert (1959–) graduated *cum laude* from UP in 1983, later obtaining an MScArch degree at Pennsylvania State University in the USA and a PhD at the University of Natal. She was appointed head of the Department of Architecture at the University of the Free State, Bloemfontein, from January 2001 until August 2004, and thereafter here at the University of Pretoria until 2008. She is currently Affiliated Professor at the University of the Free State, and in private practice. In 2018, she became the 30th Sophia Gray laureate.

⁵ Undergraduate training in architecture at the University of Cape Town. Awarded the RIBA Rome Scholarship (1957). After two years in Rome, studied under Louis Kahn and David Crane at the University of Pennsylvania. Visiting lecturer to several US schools. Joined the Faculty of Architecture at UCT (1967); Professor of Urban and Regional Planning (1970); then Professor of Architecture and Planning. Has received several design awards. Believes in a small office in which work is given personal attention, and therefore had a studio at home. In 1985, was in association with Norbert Rozendal and at the time of the Steinkopf project was in partnership with Ian Macaskill (<http://www.artefacts.co.za/main/Buildings/archframes.php?archid=2099&counta dd=1> [Accessed: 11/04/2012 14:25]). His early work was influenced by Le Corbusier and Kahn but later reflected a more contextual approach with Alvar Aalto nuances.

⁶ Kemp graduated with a BArch degree at UP in 1964 and became professor in 1987.

⁷ Professor Dieter Holm was the head of the Department of Architecture at the University of Pretoria from 1986 to 1996.

⁸ Hans Wegelin joined the department in 1970, being promoted to senior lecturer in 1986 Associate Professor in 1999 and retiring in 2005.

⁹ Anton du Toit joined the department as a junior lecturer in 1959 shortly after completing his BArch degree. He later obtained a MArch degree, becoming a full-time lecturer in 1967.

¹⁰ An ecosystem is formed by the interaction of a community of organisms within their physical environment. The interaction may be biological, physical, psychic or all. Thus, ecosystemic thinking has a relational context with an awareness of interconnectedness between organisms.

¹¹ Emeritus Professor Roger Fisher graduated from UP in 1982. He started his academic career as junior lecturer in 1986 and subsequently acted as Head of Department on a number of occasions. He was the recipient of the Heritage South Africa Gold Medal in 2013 in recognition of his contribution to the field. In 2010, he was the recipient of the Writers and Critics Award from SAIA and a publication that he co-edited, *Eclectic ZA Wilhelmiens: A shared Dutch built heritage in South Africa* was awarded an Award of Excellence by the South African Institute of Architects in 2016.

¹² Schalk le Roux completed his first qualification in 1971 and later MArch and PhD degrees from UP. In 2002, he received a Medal of Honour for Architecture from the SA Akademie vir Wetenskap en Kuns. He was Head of UP's Department of Architecture from 1996 to 2004.

¹³ Piet de Beer graduated with his BArch from UP in 1986 and, after being awarded a Fulbright Scholarship, received a MArch at Pratt Institute, New York. He was senior lecturer at UP from 1986 until 1992, thereafter at the University of Cape Town. For many years, he was also the editor of *Architecture South Africa*.

¹⁴ In 1989, Eloise Laubser graduated with a BArch *cum laude* from UP and received the ISAA award for best final year student in design. After working for Samuel Pauw, she taught part-time at the department, Free State and at UCT.

¹⁵ Amanda Breytenbach (1970–) graduated with a BArch degree from UP in 1994. She later joined the Wits Technikon as a lecturer in the Interior Architecture Department after working in private practice. She is currently the vice-dean of the Faculty of Art, Design and Architecture at the University of Johannesburg.

¹⁶ Marianne de Klerk (1970–) graduated from UP in 1995 with a Bachelor of Architecture degree, awarded with distinction. In 1998, she was awarded a Fulbright scholarship and from 1998 to 2001 she completed two master's degrees (Master of Science in Architecture Studies and Master of City Planning) at the Massachusetts Institute of Technology. She returned to South Africa in 2008 after working as a senior associate at the Thompson Design Group in Boston for nine years. Based in Pretoria, she established her own firm, Marianne de Klerk Architects and Urban Designers. In 2015, she co-organised the UDISA Re-imagine Urbanism conference and is currently serving as the UDISA North vice-chairperson.

¹⁷ Heinrich Wolff completed his undergraduate degree at UP in 1991 and his post-graduate degree at the University of Cape Town in 1995. He now practices with his wife, Ilze, after being in partnership with Jo Noero for almost 16 years.

¹⁸ Marcus Smit graduated from UP in 1994 and established Marcus Smit Jacobs Architect (currently located in the Western Cape) in 1996.

¹⁹ Heinrich Kammeyer graduated from the University of Cape Town in 1971. He received MArch and PhD degrees from UP.

²⁰ Professor André de Villiers graduated from and taught for many years at UP.

²¹ The 19th century architectural theorist, Gottfried Semper (1803–1879), classified the Mediterranean Hit at the 1851 London exhibition as comprising four elements, namely hearth, earthwork, framework/roof and an enclosing membrane (Frampton. 1995:85).

²² Inspired through Le Corbusier's Mediterranean vernacular associations.

²³ Van de Werke was born in Utrecht in the Netherlands. As a trained architect, he moved to Pretoria in 1935, where he practised until his death. He was renowned for his distinctive houses, numbering over 50 in total, mainly in Pretoria, some of which were influenced by the contemporary country house style in the Netherlands (<https://www.artefacts.co.za/main/Buildings/archframes.php?archid=4432>).

²⁴ Gerrit Wassenaar graduated in 1995 and is a director of an award-winning Pretoria practice, Arca Unlimited.

²⁵ Faan Nel graduated from UP in 1996 and is also a director of an award-winning Pretoria practice, Arca Unlimited.

²⁶ The practice has won 25 awards in its 18-year existence.

²⁷ German for home or homeland, which means a place of trust where the individual can experience safety and reliability.

²⁸ Von Meiss' article "Gravity in Architecture" (2000) explains that "beyond taste or fashion, there exists a lasting and common consensus for a perception of beauty linked to weight or weightlessness". [His] essay attempts to develop an understanding of different approaches to the issue of weight and weightlessness in architecture and civil engineering.

²⁹ Sandrock received his BArch degree from UP in 1952 and produced a prolific portfolio of late Modern Movement inspired buildings in Pretoria, many on the UP Campus. (<http://artefacts.co.za/main/Buildings/archframes.php?archid=1957>).

³⁰ Kruger completed his BArch degree at UP. He subsequently completed a master's degree in Urban Design and City Planning under Roelof Uytendogaardt at UCT in 1992. He currently practises in Cape Town.

³¹ *Entretiens sur l'architecture, 1863-72*.

³² Eaton was born in Durbanville in the Cape, trained at the University of the Witwatersrand, apprenticed with Gordon Leith and caught the eye of Herbert Baker who nominated him for membership of the Royal Institute of British Architects (RIBA). Eaton displayed a sensitivity for context and the materiality and detailing of African architecture, while the Cape vernacular greatly influenced his work (Harrop-Allin. 1975).

³³ House Nieuwenhuys received an award for new residential architecture from the Pretoria Institute of Architects in 2017 as well as SAIA Award of Merit in 2018.

³⁴ Adolf Loos (1870–1933), an Austrian architect, developed the *Raumplan*, or the space plan, which fostered a three-dimensional interconnectedness of space.

³⁵ This project altered an existing petrol station by inserting a steel and glass structure into the masonry walls.

³⁶ This project received a 2016 SAIA Commendation and a 2015 PIA Category Winner for Commercial or Brand-Related Architecture.

³⁷ Sir Herbert John Baker (1862–1946) was born in Kent in England and was articulated to various English practices. He came to South Africa in 1892 and completed alterations to, amongst others, Cecil John Rhodes's house (later Groote Schuur). He is most famous for the Union Buildings in Pretoria, completed for the Union of South Africa in 1910, in which he displayed a regionalist Classicist sensibility, particularly in the use of materials (Keath, 1994 and Greig, 1970).

³⁸ The University of Pretoria's new Future Africa campus will be the place where Africa's leading scientists and scholars from across the world and from a broad range of disciplines will come together to leverage the benefits of transdisciplinary research to address the grand challenges that face Africa and the world (<https://www.up.ac.za/future-africa>). ■